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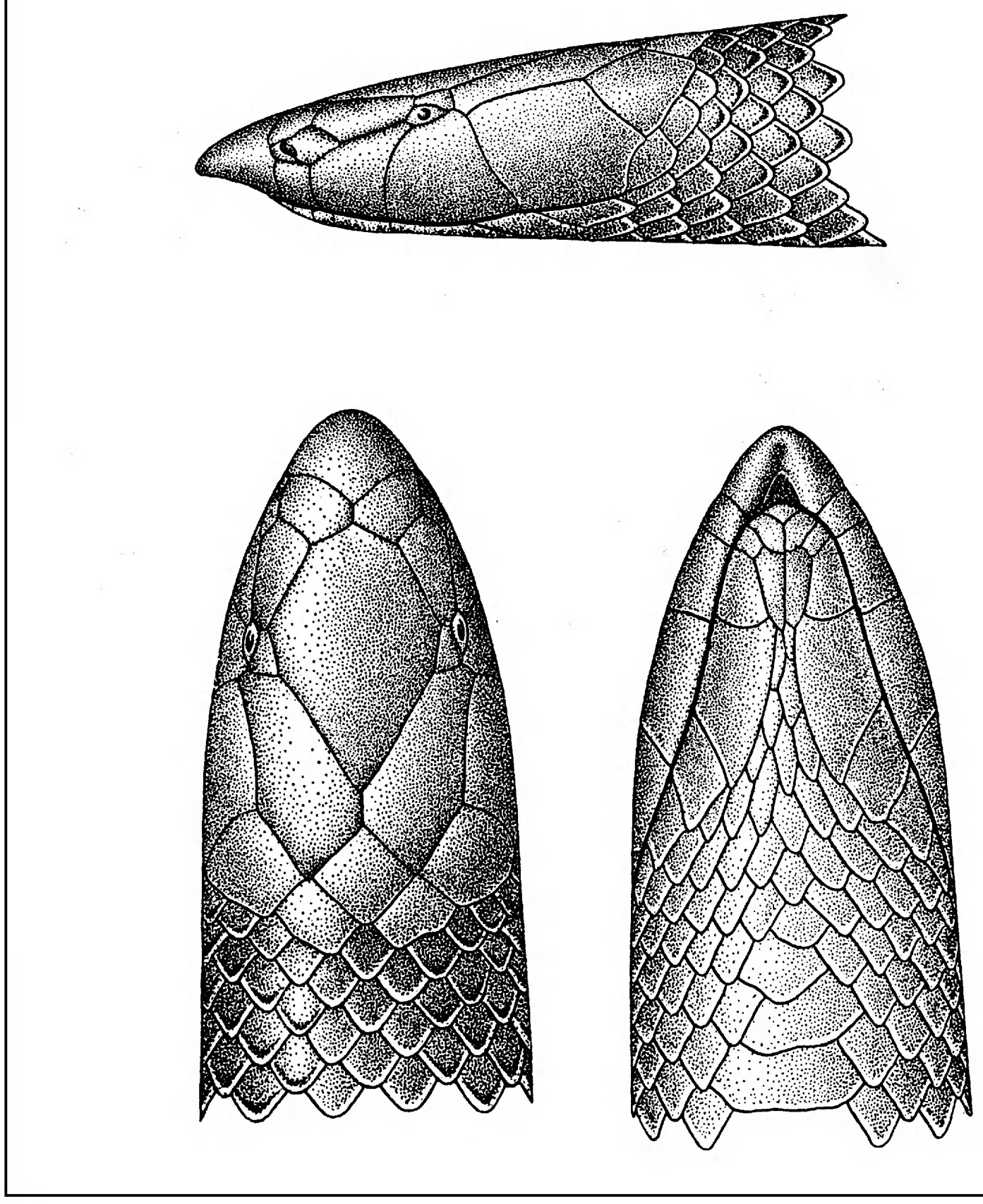

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Global Distribution of Toads of the Genus *Duttaphrynus*

Suman Pratihar[1], Nirupam Acharyya[2], Sushil Kumar Dutta[3] and Bidhan Ch. Patra[4]

Inger (1972) in order to resolve some of the problems of taxonomy of the species of *Bufo*, recognized and defined seven species groups among *Bufo* of Eurasia. These were the *biporcatus*, *asper*, *melanostictus*, *stomaticus*, *viridis*, *bufo* and *orientalis* groups. Frost et al. (2006) erected the generic name *Duttaphrynus* for Inger's *melanostictus* group. Van Bocxlaer et al. (2009), to restore monophyly of *Duttaphrynus*, recommended expansion of *Duttaphrynus* to include the most recent common ancestor of *Bufo melanostictus* (Schneider, 1799) and *Bufo stomaticus* Lütken, 1864, and all of its descendants. Mathew and Sen (2009) described six new species of *Duttaphrynus* based on seven specimens collected from northeastern India. Presently *Duttaphrynus* includes 29 species (see Table 1).

Species of the genus *Duttaphrynus* are known from the following countries (the number of species for each country is shown in parentheses): India (19), Indonesia (4), Maldives (1), Malaysia (1), Thailand (1), Singapore (1), Cambodia (1), Laos (1), Vietnam (1), Myanmar (4), China (2), Pakistan (4), Nepal (4), Bangladesh (3), Brunei (1), Bhutan (2), Sri Lanka (5), Iran (2), Afghanistan (2), Saudi Arabia (1), Yemen (2), U.A.E (1), Oman (1), Taiwan (1), East Timor (1), Papua New Guinea (1), Egypt (1), Sudan (1), Ethiopia (1), Somalia (1), Eritrea (1), Djibouti (1).

- *Duttaphrynus atukoralei* is found in the southern half of Sri Lanka below 200 m in the coastal lowlands.
- The back, legs and hands of *Duttaphrynus beddomi* are reddish-brown. The back is finely spotted with black, and the limbs marked with carmine red. The hind limbs are streaked with black, and the venter finely streaked with brown. This species is believed to be endemic to the southern Western Ghats of India. Listed as Endangered because its Extent of Occurrence is less than 5,000 km^2, its distribution is severely fragmented, and there is continuing decline in the extent and quality of its habitat.
- *Duttaphrynus brevirostris* is known only from the type locality in the central Western Ghats.
- Das et al. (2013) reported the type locality of *Duttaphrynus chandai* as Khonoma, 20 km west of Kohima (Nagaland State capital).
- *Duttaphrynus crocus* has been recorded only from two localities below 100 m elevation in Myanmar.
- The Oman toad, *Duttaphrynus dhufarensis,* is widely distributed in Yemen, the United Arab Emirates, Oman and the Najd region of Saudi Arabia.
- *Duttaphrynus dodsoni* is a medium-sized frog found in Egypt, Ethiopia, Somalia, Sudan, Eritrea and Djibouti.

Table 1. The 29 *Duttaphrynus* species and their type localities.

***Duttaphrynus* species**	**Type locality**
atukoralei	Yala, Southern Province, Ceylon [= Sri Lanka]
beddomii	Western Ghats, India
brevirostris	Kempholey, Hassan District, Mysore State, India
chandai	Khonoma village, Nagaland, India
crocus	Myanmar, Rakhine State
dhufarensis	Oman
dodsoni	Rassa Alla, Northeastern Ethiopia
himalayanus	Himalayas (in Sikkim and Nepal)
hololius	Western Ghats, India
kiphirensis	Nagaland, India
kotagamai	Ceylon [= Sri Lanka]
mamitensis	Mausen, Mamit district, Mizoram
manipurensis	Chandel district, Manipur
melanostictus	India orientali
microtympanum	Malabar, India
mizoramensis	Kolasib district, Mizoram
nagalandensis	Wokha district, Nagaland
noellerti	Koskulana (near Panapola), Sri Lanka
olivaceus	Gedrosia, Iran
parietalis	Malabar, India
scaber	Orientali India
scorteccii	Mafhaq (Yemen)
silentvalleyensis	Silent Valley Forests, Kerala, S. India
stomaticus	Assam, India
stuarti	Putao plain, NE Burma {= Myanmar]
sumatranus	Sumatra, Indonesia
totol	Sumatra, Indonesia
valhallae	Pulo Weh Island, off N. Sumatra, Indonesia
wokhaensis	Wokha district, Nagaland

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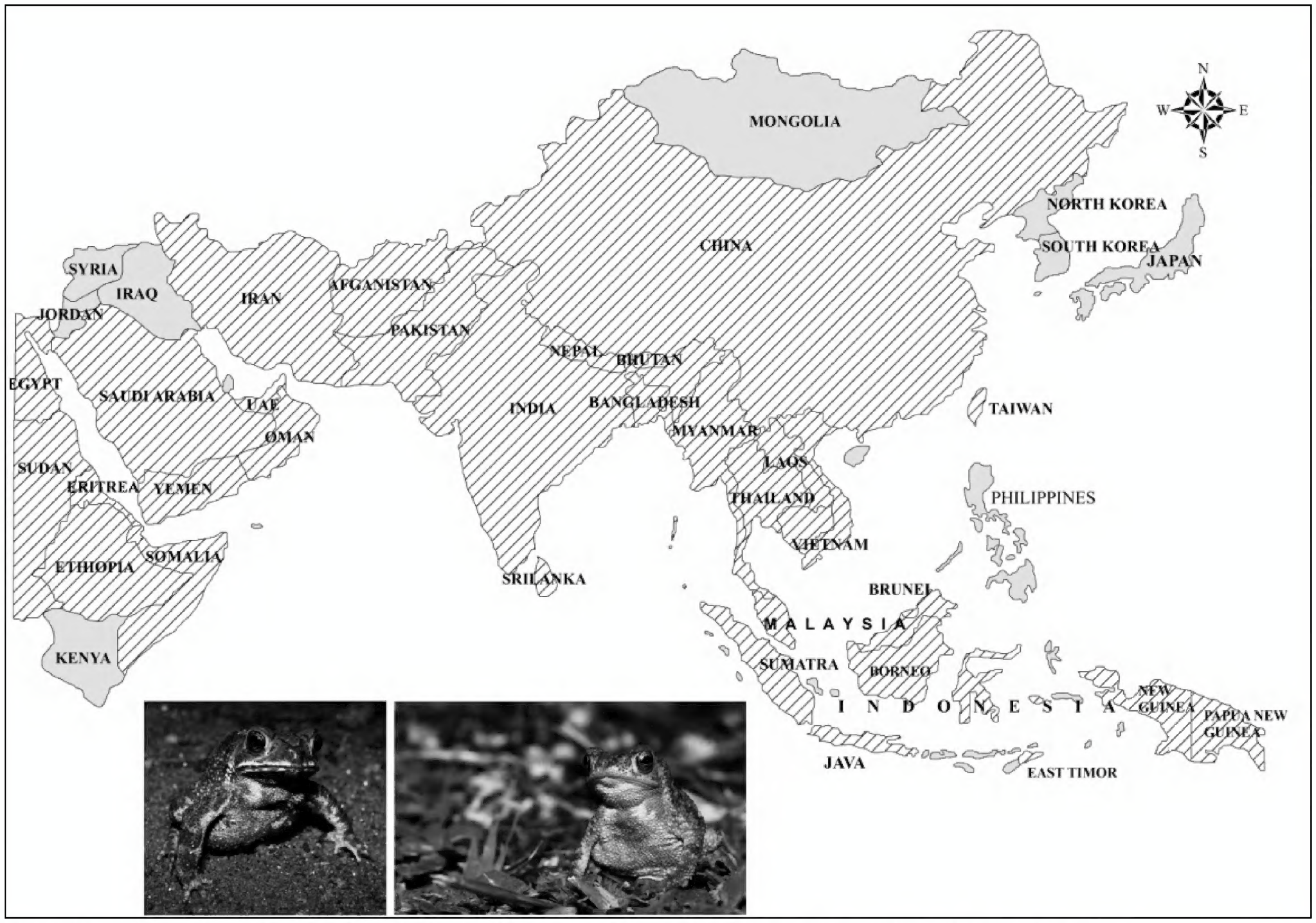

Figure 1. Distribution of the genus *Duttaphrynus*. Toads of this genus are known from those countries marked with diagonal hatching.

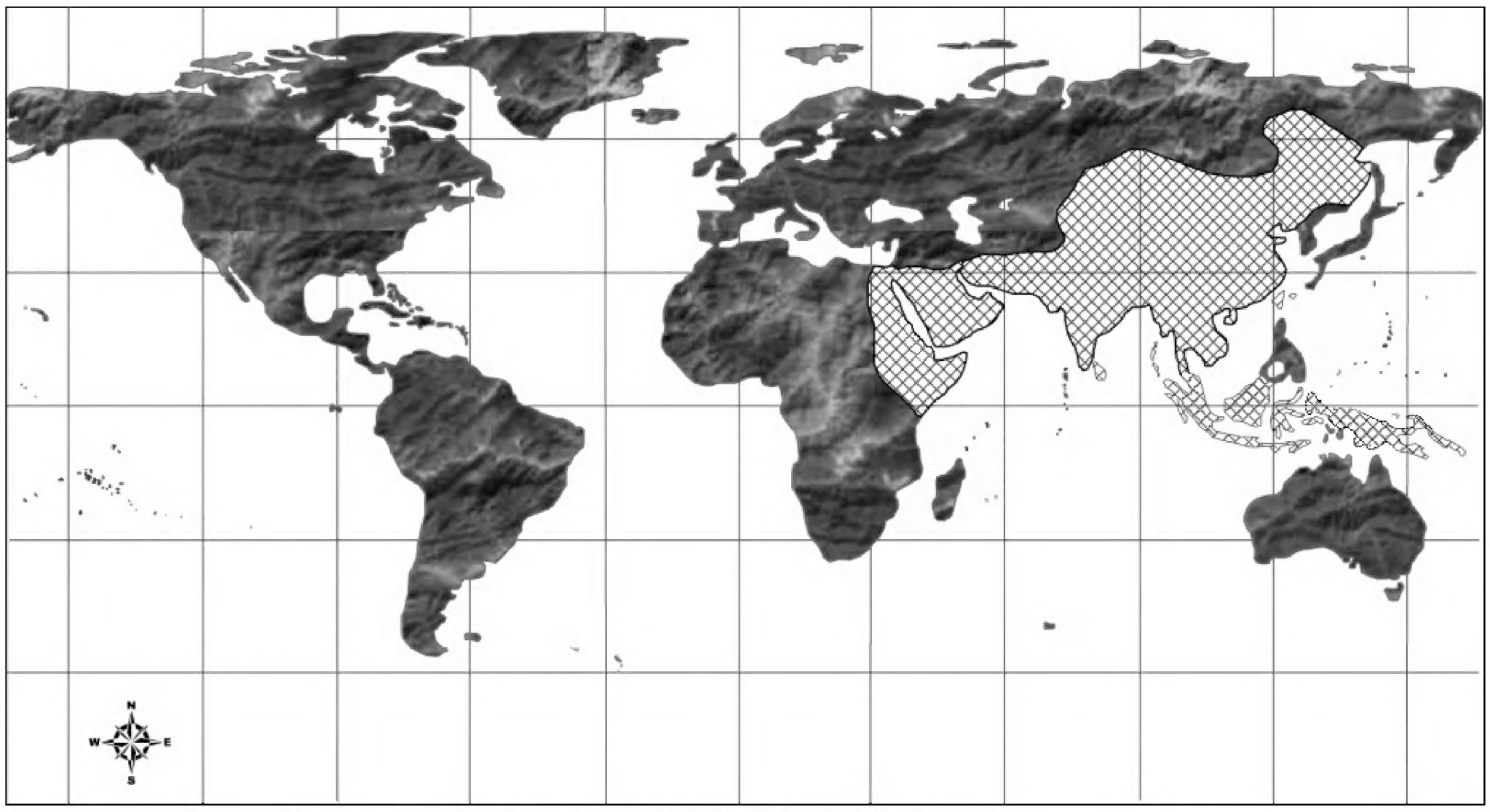

Figure 2. Toads of the genus *Duttaphrynus* are known from the cross-hatched countries on this world map.

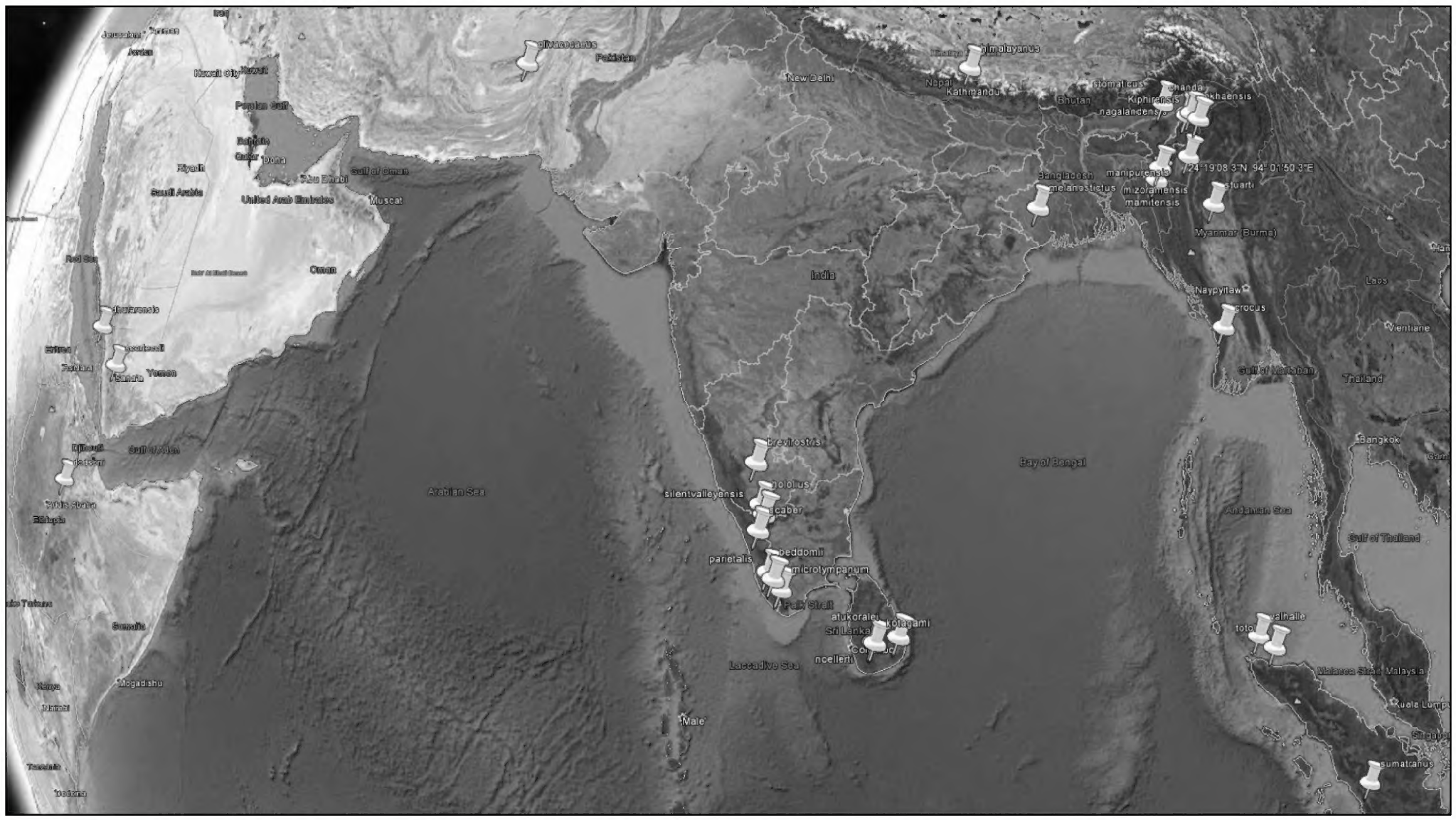

Figure 3. Type localities of the 29 species of *Duttaphrynus* are indicated by the marking pins.

- *Duttaphrynus himalayanus* is widely distributed throughout the Himalayan Mountains.
- The type locality of *Duttaphrynus hololius* could be anywhere within the entire region of the Western Ghats, India.
- *Duttaphrynus kiphirensis* is known only from Kiphire, Nagaland, northeastern India.
- Kotagama's toad, *Duttaphrynus kotagamai*, is known from only three localities in low montane rainforest habitats in southwest-central Sri Lanka below 1070 m elevation.
- *Duttaphrynus mamitensis* is known only from Mamit District, Mizoram, northeastern India.
- *Duttaphrynus manipurensis* is known only from Chandel District, Manipur, northeastern India.
- Asian common toads (*Duttaphrynus melanostictus*) have a wide distribution across Asia. The native distribution extends north from Pakistan through Nepal, Bangladesh, India, Sri Lanka, Southern China, Myanmar, Laos, Vietnam, Thailand, Cambodia, Malaysia, Singapore and Indonesia.
- The head and upper back of *Duttaphrynus microtympanum* are yellowish. Its primary habitat is wet forests—possibly endemic to the southern Western Ghats of India.
- *Duttaphrynus mizoramensis* is found only from Kolasib District, Mizoram, northeastern India.
- *Duttaphrynus nagalandensis* has been reported only from Wokha District, Nagaland, northeastern India.
- *Duttaphrynus noellerti* is known only from isolated rainforest localities in southwestern Sri Lanka, 50–460 m elevation.
- *Duttaphrynus olivaceus* is evidenced only from the extreme western parts of Balochistan and adjoining Iran.
- *Duttaphrynus parietalis* is fairly common in the Western Ghats of India, at altitudes of 400–900 m.
- *Duttaphrynus scaber* is found from Sri Lanka and peninsular India (Karnataka, Kerala, and Tamil Nadu) north to Orissa.
- The type locality of *Duttaphrynus scorteccii* is in Yemen.
- Dubois and Ohler (1999) suggested that *Duttaphrynus silentvalleyensis* (as *Bufo silentvalleyensis*) was likely a synonym of *Bufo parietalis* and placed it in their *Bufo scaber* group.
- *Duttaphrynus stomaticus* lacks cranial crests and is distributed in Afghanistan, India, Iran, Nepal, Pakistan and Sri Lanka.
- *Duttaphrynus stuarti* is limited to isolated localities in upper Myanmar and the Indian states of Arunachal Pradesh and Meghalaya.
- *Duttaphrynus sumatranus* is known only from the vicinity of Lubuk Selasi, Sumatra, Indonesia.
- *Duttaphrynus totol* is known only from the type locality between Lubukbasung and Mininjau, Sumatra, Indonesia.
- *Duttaphrynus valhallae* was reported only from the type locality (Weh Island, Indonesia), off the north end of Sumatra.
- *Duttaphrynus wokhaensis* has been reported only from the type locality of Wokha District, Nagaland, northeastern India.

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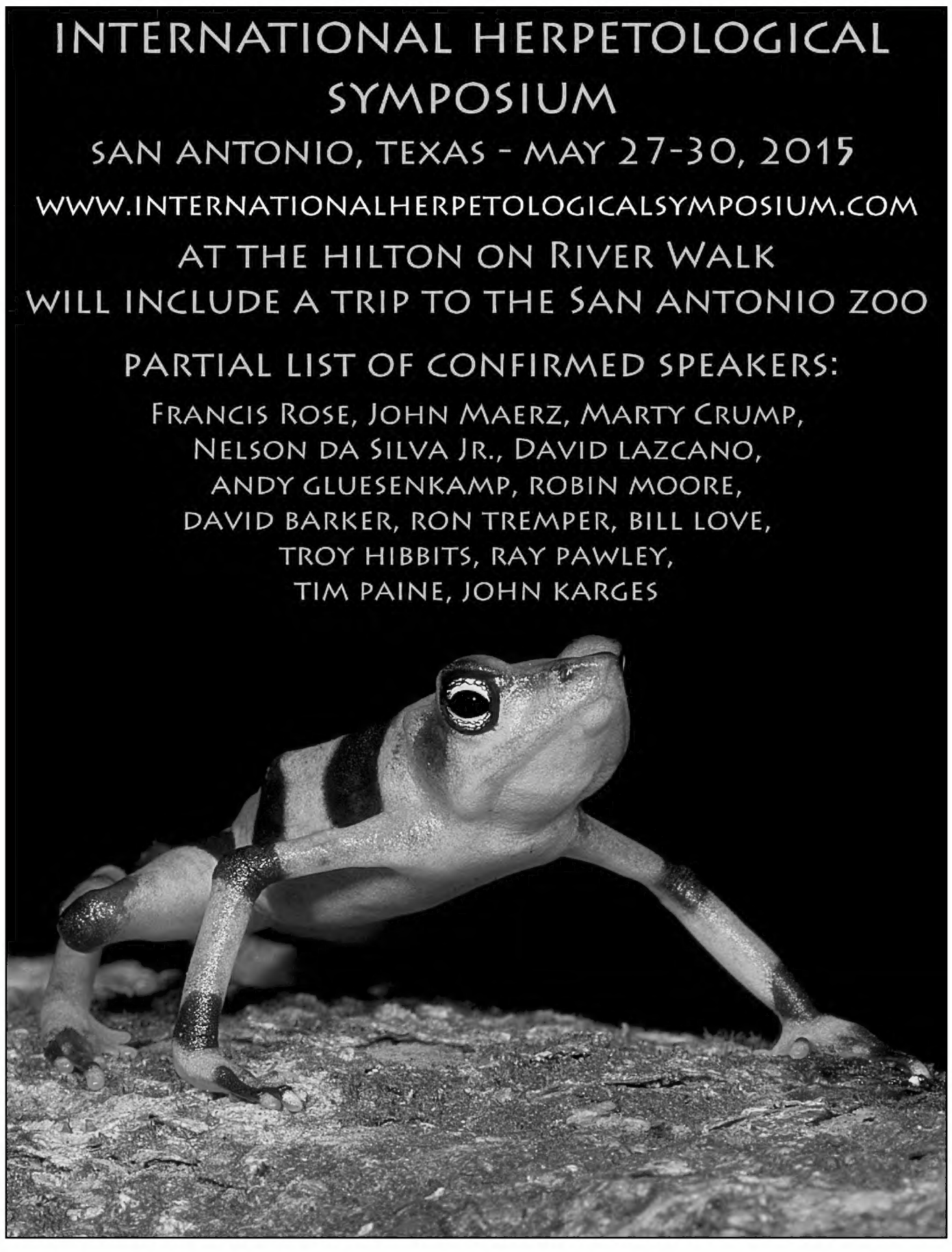
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What You Missed at the October Meeting

John Archer
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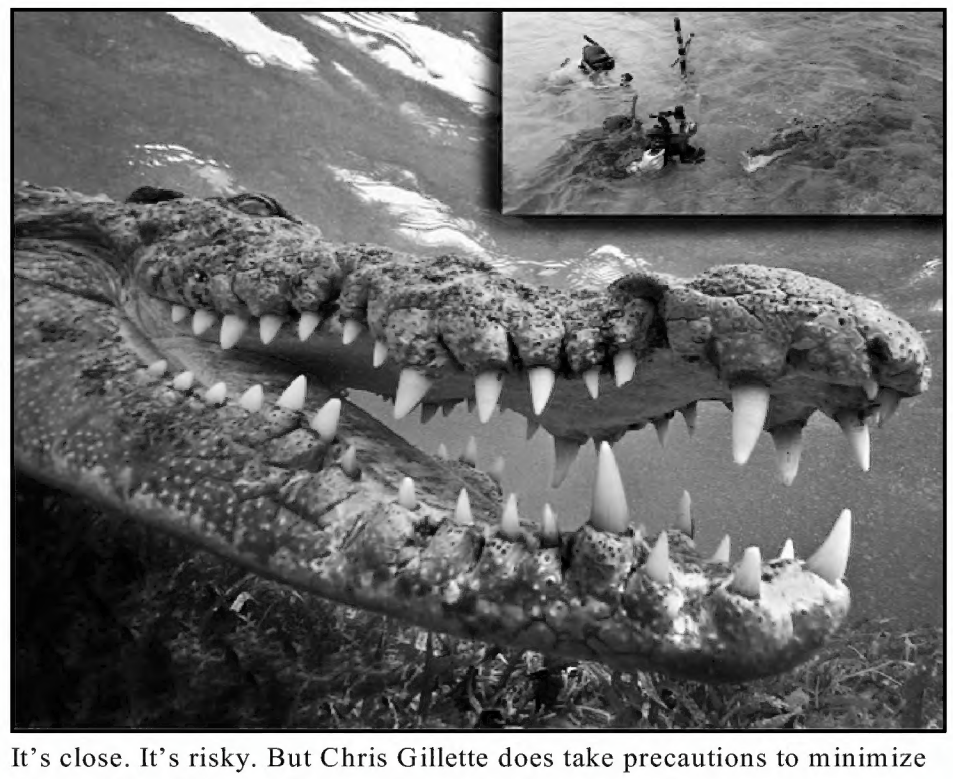
I'm old. Many things are happening in modern life that completely escape my notice. My children have tried and given up keeping me informed, but even they are moving from cutting edge to clueless twenties. I don't have cable because I'm cheap and watch too much TV anyway. I'm not well known on Facebook nor do I know Facebook well. Let's face it; I'm out of the loop in many areas. I admit this and own this fault and I still feel embarrassed that I had never heard of Chris Gillette before he was announced as our speaker. So I did the standard and googled the man. When someone is well known it is often difficult to find much about them other than what they are known for, so I got "alligator wrestler" and "Gator Boys" reality TV showing in a lot of hits. Not an auspicious beginning in my opinion. I'd never seen the show, but I have no love for "reality" TV. I know none of you watch those shows because only intelligent, rational people read this *Bulletin*. OK, maybe you've slipped and peaked at "Honey Boo Boo." No. That's just not right. You haven't, have you? Good.

Chris Gillette. Photograph by Dick Buchholz.

I persevered. I found more tidbits of his life. Started working with crocodilians at young age. Won alligator wrestling championship. Has traveled to South and Central America and Mexico. Has a degree in Environmental Sciences. Takes stunning and often amazing photographs. I was still skeptical. Jason Hood arranged his appearance and Jason has never led us astray, but I was wondering if we were going to hear a conceited TV personality give a glorious talk about his glorious feats. Then I talked with Chris on the phone about a problem with his hotel reservations. A short conversation, but Chris did not come across as a famous and demanding TV star on the phone. Just the opposite. He was easy to talk with and understanding of the problem. While still a little leery, I now looked forward to meeting Chris and hearing what he had to say about "Behavior of American Alligators and Crocodiles in Captive and Wild Situations."

How do I write about his presentation? His primary job is giving live demonstrations with live alligators several times a day reaching thousands of people each day. He talks while sticking various parts of his anatomy in or near the mouths of various crocodilians. He does this without missing a beat in his monologue, eliciting laughter from an audience that is probably hoping to see blood. He had no trouble keeping our interest. His presentation flowed as easily as a conversation. Indeed, he encouraged questions and feedback from the audience throughout his talk. And he emphasized the animals, not himself. He continually discouraged anyone from trying the same stunts he does routinely, and emphasized that he uses his extensive knowledge of animal behavior to assess the risks he takes. My favorite line of his may be, "If you're going to do something stupid, do it in a smart way." I'm pretty sure none of us learned enough to start sitting on the backs of wild crocodilians, but we learned much about not only crocodilian behavior, but also animal behavior in general. Along the way we managed to acquire some insights into Chris.

The first dive into Chris's character came with the slide headlined "Why do I do it?" He denied that he performs these feats because he wasn't held enough as a child, though he admits that many of his acquaintances claim otherwise. He says that he uses showmanship as a hook for "edutainment." He captures peoples' attention with his "daring" stunts and that allows him to dispel the myths and fables that surround these animals. His work allows him to broaden our behavorial knowledge of crocodilians while satisfying some of his own curiosity about the beasts. And he admitted that he works with these animals because it's fun, allowing him to connect with the world in a way not allowed to others. He repeatedly emphasized that he conducts himself in a professional way, always using his experience to minimize the very clear risks. A montage of two slides revealed the truth of that statement. The main slide has a very



It's close. It's risky. But Chris Gillette does take precautions to minimize those risks. The insert shows Ashley Lawrence acting as spotter and the ever-present stick. Chris also has no problem using the $4000 camera to discourage probing jaws. Unseen is a backup in a boat. American crocodile (*Crocodylus acutus*). Main photograph by Chris Gillette. Inset photographer unknown.

Chris says that he won't do this with just any old alligator, but JJ is chill enough. One needs to know the animal before this is tried. Photograph by Ashley Lawrence.

A friend of Chris's was taking some long-exposure photographs when an alligator (*Alligator mississippiensis*) decided he liked the looks of the camera and dragged it into the pond. Eight months later an alligator crawled out of the pond with the strap hanging from its leg. The camera was no longer useful, but the sim card still held info. Photograph by Chris Gillette.

close underwater shot of a crocodile, while the inset slide shows the big picture. While the camera and Chris are really close to the creature, there is a spotter beside him with a stick and a back-up boat nearby. Chris says one doesn't play with crocodilians without an observer always looking for the animal the photographer doesn't see and one always carries a stick to persuade the croc that humans are not an easy meal. His frequent spotter is his girlfriend Ashley Lawrence, an equally engaging individual who worked with big cats before being introduced to crocodilians by Chris. They both are very familiar with the behaviors of potentially dangerous animals.

He used his photographs to reveal what he's learned of alligator behavior. I have to admit that how Chris sees his subjects resonates with me. He doesn't see them as Disneyfied characters that love and appreciate the time he spends with them. Of course, he can't afford to, because if he miscalculates how an animal may act, one of these creatures may eat him. He appreciates that the animals have their own view of the world, a view into which we have only a bit of insight. I really appreciated the way that Chris avoids the word aggressive, giving a short list of why an animal may attempt to bite. He breaks it into only four reasons: feeding response, defensive response, territorial response, and fear response. Feeding responses may be the worst and strongest bites, because a croc will grab food and run with it to escape the thievery of other crocs. If your arm is mistaken for food it could be disastrous for your health. A defensive bite might be the lightest bite because the animal is simply trying to warn you away and is not trying to eat you. But Chris consistently gave us examples that defied his statements about behavior, stressing that animals are individuals and some may exhibit unexpected behaviors. In a conversation over dinner Chris said he doesn't like to rely on the training of an animal to elicit a particular response, instead preferring to use his knowledge of their behavior to stay out of trouble.

We saw photos of jumping alligators and feeding crocodiles. And photos of a ten-foot alligator resting its head in Chris' lap and Chris sitting on the back of a wild American crocodile. We heard tales of how Chris managed to train crocs that were problems for other sanctuaries and how he managed alligators at the sanctuary where he works. He showed us a nifty video from a camera strapped to the back of an alligator called Saw which had been trained to come to the sound of her name. Jerks in the video were when other gators tried to bite the camera on Saw's back. Saw was trained to come because she was in bad condi-

There is more to this than meets the eye. Chris explained many of the intricacies of training alligators. Photograph by Danny Cueva.

Knowing the animals' behaviors allow moments like this. Photograph by George Cevera.

According to Chris, crocodilians are more mellow under water. I'll take his word for it. Photograph by John Chapa.

tion from poor husbandry prior to her arrival at the sanctuary. Only able to open her mouth a small amount, she had to be fed away from the other gators. All of the alligators Chris works with at the sanctuary were nuisance alligators that would likely have been killed if not for the sanctuary.

Chris talked of his visit to the crocodile bridge over the Tarcoles River in Costa Rica. Because of people feeding them from a highway bridge, there is an inordinately large number of American crocodiles in the area. Chris showed us photos of his interactions with these wild reptiles, which admittedly took place simply out of curiosity. Using tricks of the trade and insuring he had a safety stick, Chris showed a photo of himself sitting on the back of a seemingly unconcerned croc. He detailed how he approached and the precautions he took, but his next slides showed the risks. Another crocodile, the first he had ever encountered that was focused on eating him, ignored the food offered and repeatedly attacked Chris. Dramatic photos showed Chris narrowly avoiding the jaws of a croc exploding from the murky water. Chris said that croc was the first he could legitimately label as aggressive and yet he managed to grab it under the chin on one attack and move it back. The croc was about fifteen to sixteen-feet long. It attacked for five to six times until police arrived to stop the action—but only after asking Chris to show them one more attack.

Chris is now concentrating on underwater photography. In spite of his complaints about the difficulties of taking photos under water, we saw fascinating pictures of underwater encounters with alligators and crocodiles. The animals are usually easier to approach under the water than on land or on the surface of the water. We saw close-ups of teeth and photos of him handling the animals as proof. Pushing the envelope, Chris

Those are wild animals. Risk assessment is mandatory. Photograph by John Chapa.

showed slides of night photos taken in the water. Night can be a problem because of limited visibility. While waiting at night for the water to clear, Chris became focused on a leaf just in front of his face that didn't appear to be settling. As the water cleared it revealed the leaf was the eye of an alligator face-to-face with him.

We saw many more photos and heard many more facts about the behavior of crocodilians. Chris says that he does not want to be thought of as a "crazy gator-wrestling yahoo." I suppose that some will always think of him as such. Mainstream media rarely looks at animals of any kind realistically, and definitely large, potentially harmful, crocodilians are hyped as being dangerous and even evil. Animal trainers and entertainers are rarely taken seriously by academics, but that should change. Chris and his girlfriend Ashley demonstrate that not only is a rational approach to training and interacting with "dangerous" animals possible, it's imperative if we are to understand much about animal behavior. A crazy gator-wrestling yahoo could not learn as much as Chris has learned, and would have difficulty teaching as Chris does. He claims not to be an adrenalin junky. Maybe not, but he obviously loves what he does and loves teaching people about these animals. It was a pleasure meeting both Chris and Ashley. Sorry you missed it, but you can look at his photos on Facebook and his web page (chrisgillette.com). Surely worth your time.

Bull. Chicago Herp. Soc. 49(11):160-162, 2014

Herpetology 2014

In this column the editorial staff presents short abstracts of herpetological articles we have found of interest. This is not an attempt to summarize all of the research papers being published; it is an attempt to increase the reader's awareness of what herpetologists have been doing and publishing. The editor assumes full responsibility for any errors or misleading statements.

EFFECTS OF HANDLING ON RATTLESNAKES

M. L. Holding et al. [2014, J. Herpetology 48(2):233-239] note that translocation, a management and conservation strategy used commonly in which animals are moved from their sites of origin to other localities, has proven controversial. They examined the physiological and behavioral impacts of repeated handling and short-distance translocation on rattlesnakes, which are often translocated from areas of human use because of a perceived threat to people. Northern Pacific rattlesnakes (*Crotalus oreganus oreganus*) were radiotracked for 2 months, during which time one of three treatments was imposed weekly: translocation, walk and release at that day's capture site (handling control), and undisturbed control. At both the beginning (spring) and the end (summer) of the study, blood samples were obtained before and after an acute handling stressor, and plasma concentrations of corticosterone (CORT) and testosterone (T) were determined. All rattlesnakes showed a CORT stress response, but baseline and stressed concentrations of neither hormone were affected by either translocation or handling. However, the response of both hormones to stress differed between spring and summer, with a greater increase in CORT and a detectable decrease in T occurring in summer. Activity range size was affected by translocation, whereas no effects on snake behaviors recorded during observer approach were detected. Rattlesnakes appear quite resilient to the potential impacts of frequent handling or short-distance translocation.

DESERT BOX TURTLES IN CENTRAL NEW MEXICO

D. J. Germano [2014, Chelonian Conservation and Biology 13(1):56-64] studied desert box turtles (*Terrapene ornata luteola*) at the Sevilleta National Wildlife Refuge in central New Mexico at the northern periphery of this subspecies in the Chihuahuan Desert. He recorded locations and marked all box turtles found in the northeastern part of the refuge over 23 yrs during trips to the site in 1986–1989, 1998, and 2008. Desert box turtles at the site sometimes were active in May and early June, but were most active in late June or early July into early October, with greatest activity in July and August. Numbers of box turtles on roads were significantly correlated with air temperature but not precipitation. Daily activity was bimodal during peak activity months. Growth was fairly rapid until about 10 yrs of age and then leveled off dramatically. The largest adults were about 125–130 mm carapace length (CL), and females were significantly longer than males in 2 of 3 survey periods. By 2008, a number of adults had een found that were 30–40 yrs old, and several that might have been older than 40 yrs. The mean number of eggs in a clutch varied from 2.67 to 3.55, there was no indication of multiple clutches being produced, and variation in egg number was only weakly explained by the CL of the female. Despite low reproductive rates, the population on the Sevilleta has persisted and likely will do well into the future in this protected reserve.

FROGS AND OIL PALM PLANTATIONS

J. B. Barnett et al. [2013, The Herpetological Bulletin (125):1-9] report that the spread of oil palm plantations across Southeast Asia has resulted in significant species loss and community change due to the simplification of what were once complex ecosystems. This study examined how the return of a former area of oil palm plantation in Selangor, Malaysia, to other uses may have affected the anuran assemblages present. In the study site, a tract of oil palms had been retained, while other areas of former oil palm plantation had been converted to coconut palm plantation, grassland, or allowed to naturally regenerate to secondary woodland. No evidence was found of recolonization by habitat specialists in regenerating areas; instead species commonly associated with disturbed habitats were found. While the number of anuran species found was similar between habitats, the assemblage composition varied. Furthermore, there was a considerable difference in anuran counts, with the greatest numbers in secondary woodland, followed in rank order by grassland, oil palm plantation and coconut plantation, with a near tenfold difference in anuran counts between secondary woodland and coconut plantation. Oil palm plantation was below optimum even for disturbed habitat specialist species, whichincreased in diversity and abundance once oil palm had been removed.

NESTING IN THE YELLOW-SPOTTED MONITOR

J. S. Doody et al. [2014, J. Herpetology 48(3):363-370] note that despite the general importance of nest site choice in reproductive success in taxa with little or no parental care, little is known for reptiles other than turtles. The authors report on the nesting ecology of the yellow-spotted monitor, *Varanus panoptes*, a large tropical lizard that utilizes warrens (concentrated groups of burrows) in northern Australia. They used radio-telemetry, remote photography, and the complete excavation of a warren to test the hypotheses that 1) warrens are used by multiple individual *V. panoptes*; and if so, 2) they are used for communal nesting; or alternatively 3) they are used for communal estivation during the dry season. At least six individual *V. panoptes* utilized the warren system including four females and two males, and burrows were excavated by both sexes. Excavation of the warren revealed no estivating lizards at a time when four radio-telemetered *V. panoptes* had begun estivation. However, two nests were found in the warren, indicative of either communal nesting or multiple clutches of the same female. Nests were deeper than that recorded for any other reptile and were structurally complex. The authors discuss the implications of the depth and structure of the nesting burrow for the thermal and hydric environment of the eggs and for hatchling emergence. The warren's usage by multiple individuals raises the possibility that the severe declines in *V. panoptes* caused by invasive cane toads (*Bufo marinus*) may have important implications for the *V. panoptes* social structure.

TREEFROG REPRODUCTIVE DYNAMICS

F. P. de Sá et al. [2014, J. Herpetology 48(2):181-185] in an effort to understand the seasonal reproductive dynamics of *Hypsiboas albopunctatus*, a Neotropical treefrog, studied the following components: 1) the influence of abiotic factors on seasonality, 2) how this seasonality relates to population dynamics, and 3) male breeding recruitment. Fieldwork was conducted every month from August 2007 to July 2008 within an ecotone connecting semideciduous Atlantic Forest and Cerrado (Brazilian Savanna) in São Paulo State, southeastern Brazil. Over the course of the prolonged breeding season, the authors recorded the maximum number of calling males and measured their snout–vent lengths; data from the beginning and the end of the breeding season were then compared. It was found that the breeding pattern of *H. albopunctatus* is correlated with climatic, physical, and biological factors. Male competition and aggression varied according to the population density, most likely as a function of resource availability. There appears to be a social hierarchy among males of *H. albopunctatus* according to body size. Large calling males dominated the chorus in the beginning of the breeding season, but smaller males contributed more to the assemblage as the breeding season progressed. The average size of calling males at the end of the breeding season was significantly smaller. Smaller males occurred most in January and February, marking the *H. albopunctatus* breeding recruitment, when an abundance of adequate breeding microhabitats exist. This full-season study serves as a cautionary tale: hypotheses based on body size, particularly for prolonged anuran breeder species, may be affected by seasonality.

SWIMMING WATER DRAGONS

J. L. Ringma and S. W. Salisbury [2014, J. Herpetology 48(2): 240-248] note that quantitative studies of the axial undulatory swimming techniques used by secondarily aquatic vertebrates have been largely restricted to crocodilians. Numerous lizards are also known to swim using axial undulatory techniques, but how they do so has received minimal attention from the scientific community. The authors investigated the morphology and undulatory locomotor kinematics adopted by the eastern water dragon (*Intellagama lesueurii*) through observation of natural swimming and filming of animals in a flume tank with a high speed camera. They found that morphological modifications associated with improved swimming ability and correlations between wave characteristics and swimming velocity are limited to the tail. The shape of dorsal spines and the reduction in the width of transverse processes of the caudal vertebrae result in a mediolaterally compressed tail instead of the typically rounded or dorsoventrally compressed tail seen in other Australian agamids. Axial undulatory swimming in *I. lesueurii* was found to be conceptually similar to that of crocodilians, but the relatively long and thin terminal part of the tail produces a different shaped undulatory wave. Unlike crocodilians and fishes, *I. lesueurii* does not use frequency moderated velocity control. Instead, changes in velocity are solely controlled by the phase speed of the propagating wave. The combined effect of these traits is comparable efficiency and performance in the water relative to that of crocodilians and an improvement relative to terrestrial lizards.

PAINTED TURTLES IN ARIZONA

J. E. Lovich et al. [2014, Copeia 2014(2):215-220] note that inferring the natural distribution and native status of organisms is complicated by the role of ancient and modern humans in utilization and translocation. Archaeological data and traditional cultural use provide tools for resolving these issues. Although the painted turtle (*Chrysemys picta*) has a transcontinental range in the United States, populations in the Desert Southwest are scattered and isolated. This pattern may be related to the fragmentation of a more continuous distribution as a result of climate change after the Pleistocene, or translocation by Native Americans who used turtles for food and ceremonial purposes. Because of these conflicting or potentially confounded possibilities, the distribution and status of *C. picta* as a native species in the state of Arizona has been questioned in the herpetological literature. The authors present evidence of a population that once occurred in the vicinity of Winslow, Arizona, far from current remnant populations on the upper Little Colorado River. Members of the Native American Hopi tribe are known to have hunted turtles for ceremonial purposes in this area as far back as AD 1290 and possibly earlier. Remains of *C. picta* are known from several pueblos in the vicinity including Homol'ovi, Awatovi, and Walpi. Given the great age of records for *C. picta* in Arizona and the concordance of its fragmented and isolated distribution with other reptiles in the region, the authors conclude that painted turtles are part of the native fauna of Arizona.

GOPHER TORTOISES IN BEACH DUNE HABITATS

J. C. Pawelek and M. E. Kimball [2014, Chelonian Conservation and Biology 13(1):27-34] note that gopher tortoises (*Gopherus polyphemus*), considered a keystone species in the southeastern US coastal plain, occupy a variety of upland habitat types. Although upland pine-dominated habitats have received much attention, few studies have examined tortoises in nearby coastal beach dune habitats. To examine the distribution and abundance of gopher tortoises in northeast Florida coastal habitats, comprehensive burrow surveys were conducted three times during the last 8 yrs on two separate gopher tortoise populations near St. Augustine, Florida. Objectives were to 1) examine changes in population size and structure in representative upland and coastal dune habitats and 2) describe the response of gopher tortoises to prescribed fires. Total burrow density within the upland population remained stable over the 3 surveys (0.68 burrows/ha in 2005, 0.66 burrows/ha in 2007, and 0.64 burrows/ha in 2011). Burrow densities in the burned areas of the upland habitat increased in areas that were burned at least once since the time of the first survey in 2005 but decreased in areas that were infrequently burned or remained unburned. Burrow density on the beach dunes, however, greatly increased between the most recent 2 surveys (3.63 burrows/ha in 2007 and 8.95 burrows/ha in 2011), possibly due to increased use of a relatively confined habitat, or sampling biases by surveyors. Three different correction factor methods were used to determine gopher tortoise population estimates for each of the surveys, providing a range of estimates. The results of this study and the few others focused on coastal beach dunes suggest that this vulnerable habitat should receive more attention because some of the highest burrow densities have been observed there.

MOVEMENT AND APOSEMATIC COLORATION

D. J. Paluh et al. [2014, J. Herpetology 48(2):249-254] note that brightly colored frogs of the family Dendrobatidae contain alkaloid-based chemical defenses which appear to be utilized as a deterrent to predators. The conspicuous coloration of these frogs is generally considered to be an aposematic signal to color-visioned predators. A previous field-based experiment tested this hypothesis in *Oophaga pumilio* (strawberry poison frogs) from the La Selva Biological Station using a stationary clay model experiment to assess natural predation. Avian predation rates on brown frog models were almost twice that of red frog models, supporting the hypothesis that coloration in *O. pumilio* is aposematic. A criticism of clay model experiments has been that they do not accurately represent natural organisms, especially with regard to movement. Many predators utilize movement in prey selection and may not perceive motionless clay models as prey. In an attempt to understand the importance of movement better in assessing natural predation rates using clay model experiments, the authors conducted a similar field-based clay model experiment but instead used moving models of *O. pumilio* and of brown control frogs. Moving brown models were attacked more than nine times the rate of moving red models, supporting the finding of the previous study and providing further evidence that color is aposematic in *O. pumilio*. When compared directly to the previous study using stationary clay models, birds attacked moving brown models significantly more whereas red moving models were attacked significantly less. These findings suggest that moving models may provide a better estimate of natural predator responses to an aposematic frog.

DECLINE OF THE CHEAT MOUNTAIN SALAMANDER

W. A. Kroschel et al. [2014, J. Herpetology 48(3):415-422] evaluated trends in occupancy of the Cheat Mountain salamander (*Plethodon nettingi*) over a 32-yr period and examined the potential influence of competition by sympatric salamander species on these changes. Surveys were conducted at 36 locations along four transects on an elevational gradient in the Appalachian Mountains geographic province of West Virginia. Occupancy modeling was used to examine patterns in species distributions for three focal species: *P. nettingi*, a federally threatened species, the eastern red-backed salamander (*Plethodon cinereus*), and the Allegheny mountain dusky salamander (*Desmognathus ochrophaeus*). The probability of occupancy for *P. nettingi* was considerably lower in 2011 compared to 1978–79 at medium and high elevations (1,169–1,378 m). Additionally, occupancy of *P. nettingi* was associated negatively with *P. cinereus* at the highest elevations. These data suggest that these *P. nettingi* populations have declined and *P. cinereus* have possibly expanded their vertical distribution. Thus, *P. cinereus* may be negatively affecting mid- and high-elevation populations of *P. nettingi*. Alternatively, environmental changes (e.g., habitat disturbance and altered weather patterns) may have contributed to declines of *P. nettingi* at mid- and high-elevation sites, facilitated by colonization by *P. cinereus*. Due to the endemic and federally threatened status of *P. nettingi*, conservation efforts to avoid fragmentation of *P. nettingi* habitat should be maintained and possibly enhanced, as ecological impacts of environmental changes can be exacerbated in high-elevation habitats.

DECLINES NOT CORRELATED WITH CHYTRID

R. D. Tarvin et al. [2014, J. Herpetology 48(3):291-297] note that approximately one-third of amphibian species are experiencing population declines. Among the most affected groups are the harlequin frogs (Bufonidae: *Atelopus*), nearly all of which are threatened with extinction. The authors monitored one of the last known Ecuadorian populations of *Atelopus spumarius* (Pebas stubfoot toad) with a mark–recapture survey between February 2009 and December 2010. They aimed to determine the effect of the fungal pathogen *Batrachochytrium dendrobatidis* (*Bd*), previously recorded at the site, on population size and survival, and also analyzed the effect of selective logging which occurred along the transect in April 2010. Every individual captured or recaptured was tested for *Bd* presence using end-point PCR. All 679 *Bd* swabs (from 356 individuals) were negative, suggesting that *Bd* did not influence population size and survival. Population size increased during the first 9 months of the study (August 2009–April 2010), from an estimated 47 to 92 individuals, but then decreased by November 2010 to an estimated 48 individuals. Probability of survival was 0.13 lower in months following selective logging compared to previous months; emigration decreased by 0.37 after the logging event. Pairs in amplexus were found between April and December, suggesting a long, if not year-round, reproductive period. Although most *Atelopus* spp. declines have been attributed to *Bd*, in this case *Bd* had been detected in the area yet changes in population size cannot be attributed to chytridiomycosis. Analyses of survival and male body condition suggest that the decline at the end of the study was the result of habitat destruction.

EFFECTS OF NECTIVORY ON FORAGING

W. E. Cooper, Jr., et al. [2014, J. Herpetology 48(2):203-209] note that foraging modes were described originally for insectivorous lizards, but many species are omnivorous or herbivorous. Because seeking and consuming plants might alter foraging, the authors studied foraging by the omnivorous *Podarcis lilfordi* at two sites: one where lizards licked nectar from flowers of *Euphorbia paralias* and the other where they sought insects. Movements per minute (MPM) did not differ among groups. Proportion of time spent moving (PTM) was similar in lizards that licked flowers and those that did not. Average speed (AS) was slower, and speed while moving (MS) was faster when foraging for nectar than for insects. Lizards foraging for nectar did not eat insects; those foraging for insects frequently ate them. For lizards foraging for prey, MPM increased as PTM, AS, and capture attempts increased and as PTM decreased. PTM increased as AS and capture attempts increased and decreased as MS increased. AS increased as MS increased. For lizards that licked, proportion of time licking (PTL) was unrelated to MPM, PTM, or AS but increased marginally as MS increased. Lizards foraging for nectar retained the PTM of lizards foraging for prey, but added a large PTL. The ancestral mode has been retained for hunting insects but modified to search for and lick nectar. While foraging for nectar, lizards greatly reduce attacks on insects, suggesting that, at a given time, an individual forages exclusively for nectar or prey. Reduced predation pressure on islands may have freed lizards to expand the diet by reducing risk during intervals exposed to view while climbing plants and licking nectar.

Unofficial Minutes of the CHS Board Meeting, October 24, 2014

President John Archer called the meeting to order at 7:30 P.M. Board members Jason Hood, Nancy Kloskowski and Erica Mede were absent.

Officers' Reports

Recording Secretary: Minutes of the September 12 board meeting were read and approved..

Treasurer: Andy Malawy went over the financial report for the month of September.

Membership Secretary: Mike Dloogatch reported that membership is steady at approximately 475, and read aloud the list of newly lapsed members.

Sergeant-at-arms: Dick Buchholz reported 38 in attendance at the September general meeting.

Publications Secretary: Aaron LaForge reported that the website has been updated with the first six *Bulletin*s of 2014 and the announcement of the 2015 grants program.

Committee Reports

Shows:
• Notebaert Nature Museum, first full weekend of each month.
• Creatures of the Night, Garfield Park Conservatory, October 29.
• Aquatic Experience Chicago, Schaumburg Convention Center, November 7-9.
• SEWERFest, November 9.
• Fishing / Sportsman's Show, Schaumburg Convention Center, January 29–February 1.

Adoptions: Colleen Schwarz has been added as a contact to the website. Colleen will post adoptable animals to Facebook prior to general meetings..

Junior herpers: There were 42 in attendance at the October Show and Tell meeting. The next meeting will be the second anniversary for the Junior Herpers. Yvette Hermendez will be talking about "Reptile Moms and Babies." Rich Lamszus has been invited to write monthly blog for the Notebaert website. Rich will be looking for content.

Library: Teresa Savino is looking for a volunteer to check books in and out at the general meeting when Teresa can't be there.

Old business

Because the last Wednesday in December is New Years Eve, the holiday party will take place on Tuesday, December 30.

Mike Scott has volunteered to take charge of Herps of Illinois at ReptileFest.

Bylaws: John Archer suggested "social media coordinator" as a new board position. This might involve several secretary positions being combined under "communications secretary." John once more asked for suggestions and ideas by the next meeting for changes to the bylaws.

New Business

Grants: Mike Dloogatch suggested that we formally approve the grants program for 2015 and appoint a committee. A motion carried unanimously that grants should be offered next year, with the cap to remain at $1,000. John Archer, Linda Malawy, Robert Jadin and Sarah Orlofske volunteered to serve on the committee. Mike will find out if Steve and Amy Sullivan wish to participate.

Adoption fund expenses: A motion was made to reimburse Teresa Savino $500 for vet bills incurred for animals she was fostering. Dick Buchholz, Mike Dloogatch, Aaron LaForge, Rich Lamszus and Mike Scott voted for. Andy Malawy voted against. Teresa Savino was excused from the vote. A written policy for the handling of adoption and fostering expenses will be prepared. A motion to purchase two vision cages for adoptions was passed unanimously.

Round Table

Rachel Fessler had a phone call from Scott Ballard asking her to take in another ornate box turtle. She mentioned that soon there will be an annual $50 fee for a license to keep protected species, $150 for a license to breed them.

Teresa and Roy recently vacationed in Lake Tahoe.

Rich had lots of fun on the Columbus Zoo trip.

Robert Jadin is giving a talk on Halloween on venomous snakes; he and Sarah may have suggestions for future speakers.

Mike and John were the only representatives of the CHS at the Midwest Herp Symposium. Next year's symposium will be in the Madison area.

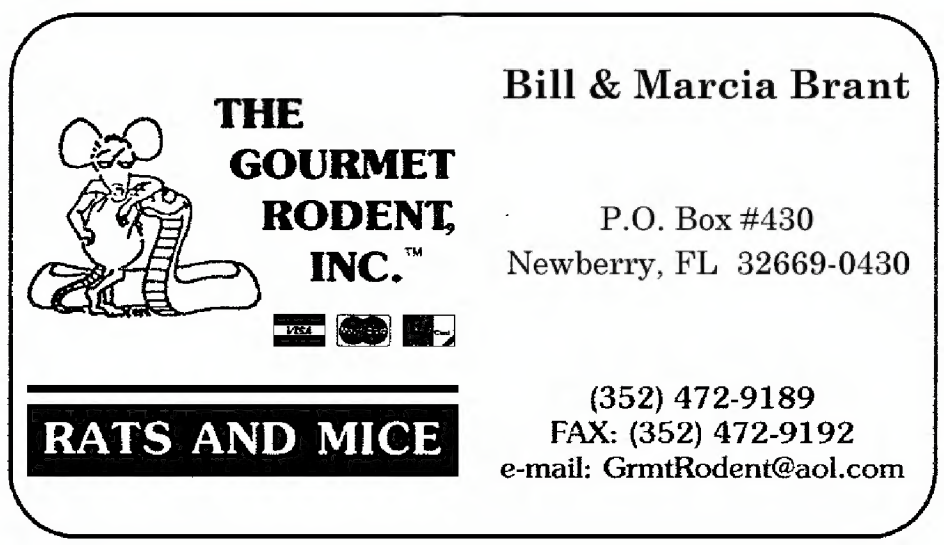
Ed just got back from Ohio and reports that the gray rat snake population is thriving.

Mike Scott moved in with Noreen at the beginning of the month.

Gavin Brink mentioned that Lake Erie watersnake has been delisted for two years due to increasing population.

John Archer said that he and Mike D saw 4 different species of snake in the first 50' of snake road, including a green watersnake

Respectfully submitted by Rachel Fessler and David Hoff



Advertisements

For sale: **highest quality frozen rodents**. I have been raising rodents for over 30 years and can supply you with the highest quality mice available in the U.S. These are always exceptionally clean and healthy with no urine odor or mixed in bedding. I feed these to my own reptile collection exclusively and so make sure they are the best available. All rodents are produced from my personal breeding colony and are fed exceptional high protein, low fat rodent diets; no dog food is ever used. Additionally, all mice are flash frozen and are separate in the bag, not frozen together. I also have ultra low shipping prices to most areas of the U.S. and can beat others shipping prices considerably. I specialize in the smaller mice sizes and currently have the following four sizes available: Small pink mice (1 day old—1 gm) , $25 /100; Large pink mice (4 to 5 days old—2 to 3 gm), $27.50 /100; Small fuzzy mice (7 to 8 days old—5 to 6 gm) , $30/100; Large fuzzy mice / hoppers (10 to 12 days old—8 to 10 gm), $35/100 Contact Kelly Haller at 785-234-3358 or by e-mail at kelhal56@hotmail.com

For sale: Captive-bred Rosy Boas. Forty-year C.H.S. member is selling 2011 and 2013 healthy and excellent feeding offspring. Special "cheap" prices to C.H.S. members. Arrangements can be made for delivery to southern Wisconsin or northern Illinois. Phone (608) 427-3864 or email zartenfour@mwt.net.

For sale: Standard 24" Neodesha reptile cages, 3 × 6" vent on top, tempered glass front. Like new condition, no burns or stains, original glass. These cages do not have the dam (horizontal molding that crosses the entire front width of the cage, used to hold back bedding material)—easier to clean without the dam. About 20 currently available, $45 each. Linda Malawy, (630) 717-9955, linda_malawy@hotmail.com

For sale: High quality, all locally captive-hatched tortoises, all bred and hatched here in the upper Midwest. Baby leopards, Sri Lankan stars, and pancakes usually available, and are all well-started and feeding great! Leopards are $125 ea., Sri Lankans (2012 hatched) $475 ea. And Pancakes are $195 ea. Leopards for out of state sale/shipping require a veterinary health certificate (inquire for cost). E-mail at KKranz1@wi.rr.com or call Jim or Kirsten at 262 654 6303.

Herp tours: **Costa Rica herping adventures**. Join a small group of fellow herpers for 7 herp-filled days. We find all types of herps, mammals, birds and insects, but our target is snakes. We average 52 per trip, and this is our 10th year doing it. If you would like to enjoy finding herps in the wild and sleep in a bed at night with air-conditioning, hot water and only unpack your suitcase once, instead of daily, then this is the place to do it. Go to our web-site http://hiss-n-things.com and read the highlights of our trips. Read the statistics of each trip and visit the link showing photos of the 40 different species we have found along the way. E-mail at jim.kavney@gmail.com or call Jim Kavney, 305-664-2881.

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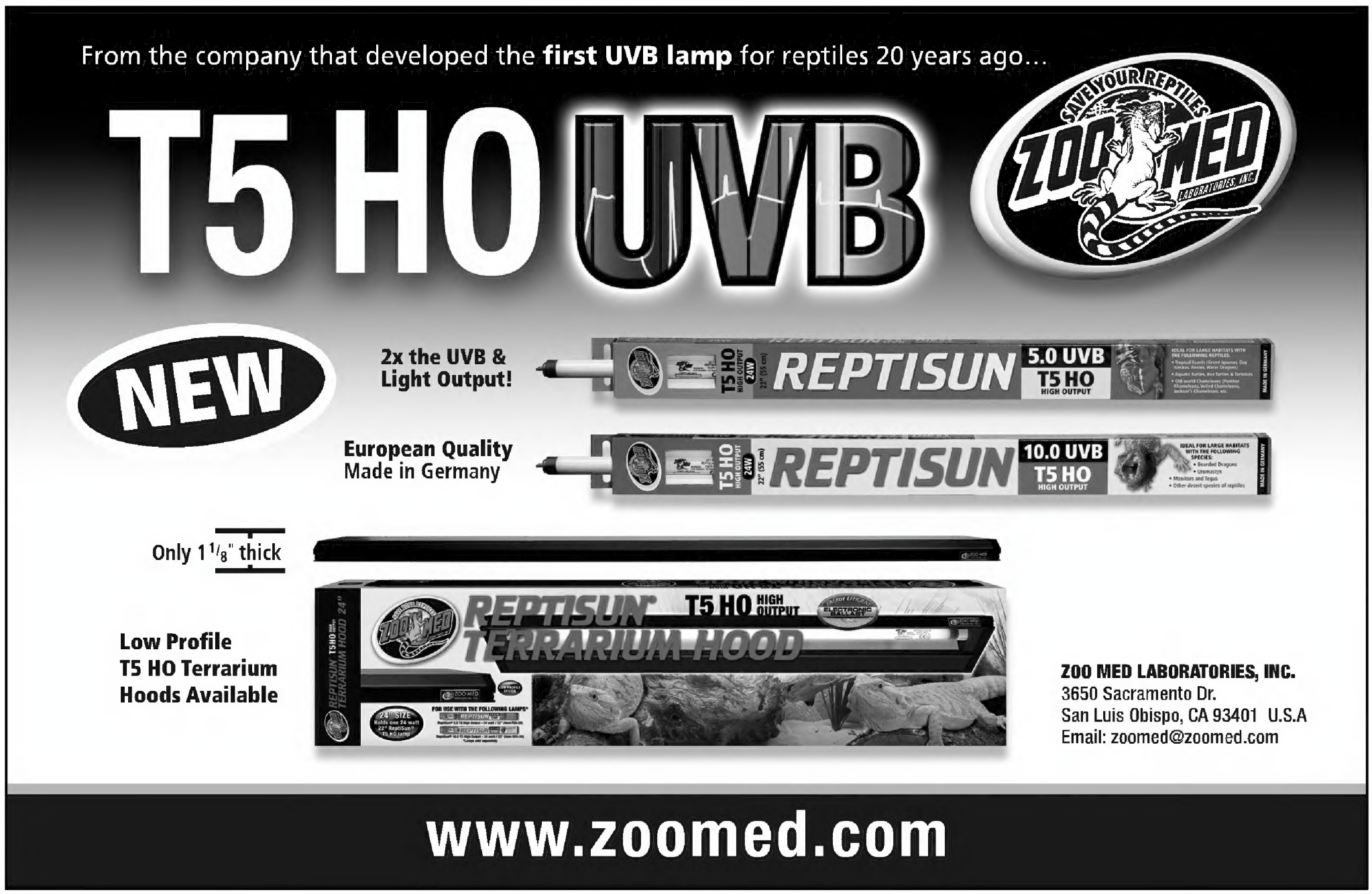
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UPCOMING MEETINGS

The next meeting of the Chicago Herpetological Society will be held at 7:30 P.M., Wednesday, November 26, at the Peggy Notebaert Nature Museum, Cannon Drive and Fullerton Parkway, in Chicago. This meeting will include the annual election of officers and members-at-large of the CHS board of directors. Also at this meeting the speaker will be **Stephen L. Barten, D.V.M.** Steve is a long-time member and past president of the CHS, an excellent speaker and a terrific photographer. He recently traveled to Brazil. The title of his talk is "The Wildlife of the Pantanal, Brazil." The Pantanal of central-western Brazil is the world's largest wetland ecosystem, covering an area 15 times the size of the Everglades (it's also bigger than 29 of the states in the U.S.). It has the densest population of crocodilians—Yacare caimans—found anywhere in the world, and is a great place to find yellow anacondas. It also is one of the best places in the world to see wild jaguars, giant river otters, giant anteaters, tapirs, howler and capuchin monkeys, coatis, and capybaras, as well as the critically endangered hyacinth macaw and over 650 other species of birds. Steve toured the Pantanal by bus, truck, boat, and foot, which allowed him close approach and photography of the wildlife. The highlight was witnessing a jaguar catch a 6-foot caiman.

The December meeting will be a holiday party. Because the last Wednesday is New Years Eve this party will take place on Tuesday evening, December 30. The CHS will provide soft drinks and snacks. If you would like to bring something edible to share with the group, you are invited to do so. If you would like to bring an animal to show off to the group, you are encouraged to do that as well. This will be a chance to socialize all evening and get to know your fellow members a little better.

The regular monthly meetings of the Chicago Herpetological Society take place at Chicago's newest museum—the **Peggy Notebaert Nature Museum**. This beautiful building is at Fullerton Parkway and Cannon Drive, directly across Fullerton from the Lincoln Park Zoo. Meetings are held the last Wednesday of each month, from 7:30 P.M. through 9:30 P.M. Parking is free on Cannon Drive. A plethora of CTA buses stop nearby.

Board of Directors Meeting

Are you interested in how the decisions are made that determine how the Chicago Herpetological Society runs? And would you like to have input into those decisions? If so, mark your calendar for the next board meeting, to be held at 7:30 P.M., Friday, December 19, at the Schaumburg Township District Library, 130 S. Roselle Road, Schaumburg.

The Chicago Turtle Club

The monthly meetings of the Chicago Turtle Club are informal; questions, children and animals are welcome. Meetings normally take place at the North Park Village Nature Center, 5801 N. Pulaski, in Chicago. Parking is free. For more info visit the group's Facebook page.

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